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(54) Title: METHOD FOR ASCERTAINING THE AUTHENTICITY OF A PREDETERMINED PRODUCT

(57) Abstract

A method is disclosed for certifying the authenticity of predetermined products which include a carrier for a set of identification codes concerning distinctive data of said products. Said method comprises the step of obtaining a check code by means of computation of at least a part of said identification codes according to predetermined algorithms; furthermore, the method comprises the following steps: a) enabling a predetermined and limited number of links between each check code and said identification codes; b) generating said check code consistently with said links within the enabled range of links as defined in step a); c) printing said check code on said carrier according to the generated links. The products may be constituted by, e.g. a label for an article of clothing, a railway, airplane, bus, boat, theater, entrance ticket, an instrument of credit, e.g. a state bond, a coupon, a compact disk, a credit card.

METHOD   FOR   ASCERTAINING   THE   AUTHENTICITY   OF   A
PREDETERMINED   PRODUCT

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TECHNICAL FIELD

The present invention relates to a method for ascertaining the authenticity of a predetermined product which includes a carrier for a set of identification codes concerning distinctive data of said product, said method comprising the step of obtaining a check code by computation of at least a part of said identification codes according to predetermined algorithms.

Said method is intended to meet two primary requirements which are recognized to be particularly urging in several technical fields, i.e. ascertainment and repression of falsification as well as checking whether the production carried out by possible third parties is exactly defined in the ordered range, thereby controlling the authenticity of the products which are being marketed.

The invention may be mainly applied for certifying the authenticity of a plurality of products such as articles of clothing, tickets of any kind (e.g. railway, boat, airplane tickets, theater or fair tickets), state bonds or similar instruments of credit, coupons, compact disks, credit cards, etc.

BACKGROUND ART

Some applications provide for the use of special identifications means, such as, for instance, watermarked paper or holograms embedded in the carrier, in order to avoid the falsification or imitation of a given product.

However, these identification means are characterized by relatively high costs, they may only be used in specific

applications and, furthermore, they cannot ensure a full protection against possible imitations or falsifications.

In other fields such as, for instance, checking either of tickets or of coupons or of compact disks or of articles of clothing, the background art does not provide for any suitable instrument for verifying and/or identifying any possible falsification or imitation of the given products.

The ascertainment operation is normally delegated to the sensitiveness and to the experience of the persons who are deputed to such control, but it is almost never possible to ascertain with a good degree of certitude the illegitimacy of the product, specifically in the case where this is manufactured by the same parties to whom the authorized production is ordered.

Therefore, it is common habit to exceed the assigned production limits in order to produce a certain number of articles addressed to the illegitimate trademarket, these articles being almost undistinguishable from the ones the production of which is legitimately authorized.

Some expedients suitable for avoiding the increasing of forgeries have been introduced in the technical field of credit cards and of similar paying systems using cards.

In this case, for instance, algorithms, known to the staff assigned to control the card, are used to verify the possible authenticity of the card or pass on the basis of the number given to the card or pass itself.

However, said expedients may scarcely be used in the case of other products which have to be controlled and do not allow by any means to control and to limit the production of the said products in the assigned range.

DESCRIPTION OF THE INVENTION

The present invention aims to provide for a method by means of which it is either possible to verify the

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authenticity of a given product, or the legitimacy of its production, or both, thereby obviating the drawbacks of the background art.

This is achieved by carrying out a method having the features disclosed in claim 1.

The dependent claims outline advantageous forms of embodiment of the method according to the invention.

According to this method for certifying the authenticity of a predetermined product which includes a carrier for a set of identification codes concerning distinctive data of said product, a check code obtained by computation of at least a part of said identification codes according to predetermined algorithms is printed on said carrier.

According to the method of the present invention two kinds of modular units are employed, each comprising a computation unit and a microchip card in order to create a link between the value of the product identification codes and the value of the check code and to respectively control whether the value of the predetermined product codes and the value of the inspection code are consistent in respect of each other.

In such a way it is possible to provide a controller with a small portable computer, by means of which the controller can input both the product identification and check codes, thereby immediately obtaining a message certifying whether the inspected product is an original one or not.

ILLUSTRATION OF DRAWINGS

Other features and advantages of the present invention will appear from the following detailed description of an advantageous form of embodiment of the invention, given as a non-limiting example, with the help of the attached drawing which shows, on a plan view, a label suitable for being sewn to an article of clothing.

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DESCRIPTION OF A FORM OF EMBODIMENT OF THE INVENTION

In the figure, reference sign 1 shows a carrier constituted by a label for an article of clothing, used in the specific technical field of clothing and fabrics, said label 5 bearing a plurality of fields, numbered from 2 to 21.

One or more identification codes concerning technical data of the product are printed on one or more of said fields.

For instance, field 2 shows a numeric identification code relating to the production order of an article of clothing, 10 field 4 shows a numeric identification code relating to the used fabric, field 5 shows a numeric identification code relating to the manufacture coupon, field 7 shows a code concerning the type of model and field 8 a code relating to the lining.

15 All the above mentioned codes are visibly printed on the label so as to immediately identify the article and its manufacturer. Furthermore, the label is provided with another field, indicated by reference sign 17.

An identification code is printed on said field 17, 20 generally with invisible ink and recognizable under specific conditions, for instance by means of Wood light.

The value of said code is derived, by calculation according to a predetermined proprietor algorithm and a secret session key, from the numeric (or alphanumeric) values of the 25 product identification codes visibly printed in one or more of the remaining fields.

For instance, the inspection code may be derived by applying the predetermined algorithm to the numeric values of one or more of the order codes, fabric and coupon (fields 2, 4 30 and 5).

Thus, the link of the value of the product identification codes together with the value of the inspection code is univocal and inhibits the possibility of counterfeiting the

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label.

According to the method of the present invention two kinds of modular units, later on definied as modules, are employed, each comprising a computation unit and a microchip
5   card, in order to create a link between the value of the product identification codes and the value of the check code and to respectively control whether the value of the predetermined product codes and the value of the check code are consistent in respect of each other.
10   The first modular unit is later on indicated as PRODUCTION MODULE, while the second modular unit is indicated as INSPECTION MODULE.

Moreover, two different types of microchip cards, respectively indicated as OPERATOR and SUPERVISOR cards, are
15   also employed so as to assign defined limits to the creation of links between the product codes and the check codes.

Both modules comprise a computation unit consisting of a microprocessor including a PROM memory which is protected from reading or improper use after having been programmed.
20   The production module comprises a two lines and sixteen letters display, a numeric or alphanumeric keyboard, a microchip card reading and recording unit and a serial port rs232c for the connection to a control and external computation unit.
25   The inspection module comprises a one line and eight letters display, a numeric or alphanumeric keyboard and a permanent memory.

The SUPERVISOR and OPERATOR cards are microchip cards, for instance of the type GPM 896 by Gemplus.
30   The SUPERVISOR card includes:

a)   a 8-bytes sender area which can be made unalterable, after writing, by burning a fuse;

b)   a first 32-bytes application area, which is nearly

unlimitedly erasable and which is used to store variable data;

c)   a second 32-bytes application area, which may limitedly be erased (128 times) and which is used to store the configuration data;

d)   a secret code consisting of 4 hexadecimal digits for allowing the reading and/or the writing of these areas;

e)   a secret code consisting of 12 hexadecimal digits for allowing the erasure of the first application area;

f)   a secret code of 8 hexadecimal digits for allowing the erasure of the second application area;

and this card is delivered at clothing manifacturer request in order to control the issue of OPERATOR cards.

The OPERATOR cards are issued by means of the production modules.

A SUPERVISOR card is introduced in the reader of the production module and, as soon as it is identified and recognized by the operative system, and confirmed by inputting a secret code, it enables the subsequent procedure.

According to such procedure it is requested to introduce the number of links between inspection codes and product codes which have to be enabled on the OPERATOR card which has to be issued.

The enabling procedure can be numerically limited to a prefixed maximum value.

If the requested number of links exceeds the maximum value or the remaining value of allowed enablings for the SUPERVISOR card, the operation is automatically annulled.

In the case where the procedure is enabled, the module requests the introduction of an OPERATOR card to be created or regenerated by means of a suitable message on the display.

If the card which is introduced into the reader is recognized to be a valid OPERATOR card, the module proceeds to

erase the remaining value of the links (this therm is used to indicate the links between the check code and the product codes) and it loads the requested value.

In this way a subsequent generation of links within the numeric limit of links which have just set up, is enabled.

Said generation of links is carried out by connecting the production module to the control and external computation unit which carries out the printing operation of the labels.

An OPERATOR card, which is enabled to generate a number of links equal to or greater than the requested number, is introduced in the reader of the production module.

The card is tested and, in the case where it is recognized as an enabled one, the number of links, the generation of which is allowed by the card, appears on the display of the module.

Thus, the generation of the links and the labels print goes on by continuously updating the availability of links allowed by the OPERATOR card until the number of the requested links has been reached, i.e. the availability of the card is exhausted.

In this way the production of labels and consequently the production of articles of clothing on which said labels will be successively applied to are peremptorily controlled.

For instance, this control can be particularly useful to limit (or to enable) the production made by licencees who are contractually bound to pay royalties for every manufactured article, or to respect numeric limits of production.

The ascertainment of authenticity of the labels and thus of the articles on which they are applied is carried out by the assigned staff by using the inspection module, i.e. a portable, suitably programmed computer.

The software requests the sequential input of the product codes which were used for generating the links, by means of an

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algorithm, together with the check code.

For instance, firstly the input of the order code is requested, secondly the input of the season code, followed by the input of the coupon code and, at the end, the input of the check code.

When the data input operations are over, each of them being concluded by a validation query, the inspection of authenticity is carried out, i.e. the consistency is checked between the product codes and the assigned check code.

In the case where the inspection is positive, i.e. the label is certainly authentic, in the inspection module carries out the following operations:

- increase of a meter which counts the tests verified in the permanent memory,
- update of the check field in the same memory,
- display of the message "TRUE".

Therefore, the module is ready to receive the input codes relating to a new inspection.

In the case where the inspection is negative, thus the label is certainly false, the inspection module carries out the following operations:

- increase of a meter which counts the not verified tests in the permanent memory,
- storing in the permanent memory the data introduced in a closed-loop buffer keeping the last ten wrong tests,
- updating the check field of the same memory,
- displaying the message "FALSE".

Then, the module is set in a stand-by condition, ready to receive the input codes relating to a new inspection.

It is possible to check the contents of the permanent memory, before inputting an alphanumeric key, in order to display any message relating to the number of verified and unverified tests and also to display the data concerning the

last ten obtained falses.

Thus, the method of the present invention is based on the following operations:

- enabling a predetermined and limited number of links between each check code and the corresponding enabling codes of the product,

- generating the check codes consistently with the links in the enabled range defined in the previous phase,

- printing the check codes, one for each label, according to the generated link.

The number of links is enabled within predetermined limits by providing a first microchip carrier and a computer, which together define the operator module; the microchip carrier is integrated in the OPERATOR card and includes a decreasing memory which is programmed for a maximum number of said links, which number is decreased, after generation of new links, by the number of links which have already been carried out, the enabling procedure of new links being limited by the number of links available in said memory.

Furthermore, a second microchip carrier is provided, in the form of a supervisor card, which is suitable for interacting with the first microchip carrier, by means of the computation module, in order to store, in the memory of the operator card, the maximum number of links between the check code and the product codes which may be carried out.

Since the counterfeiter usually applies false labels, though similar to the original ones, to the articles abusively marketed, the method according to the invention allows the double result to be achieved, to control the authenticity of the articles, as well as to numerically limit the original labels which can be produced.

The invention has been previously described with reference to an advantageous form of embodiment thereof.

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However, it is clear that the invention may also be applied to several different fields.

By way of example, the method has an advantageous application in ascertaining the authenticity of tickets, state bonds, coupons, etc..

In these cases the verification codes and check codes are directly derived from the progressive serial number appearing on each ticket, the method being otherwise carried out as described above with reference to labels.

According to a development of the invention the progressive serial number appearing on the ticket may be coded too, thereby preventing any possibility to find out the check code.

Furthermore, in the case where special inks, visible only by means of a Wood light, are used for printing, the Wood light source may be modulated in such a way that the coded parts are shown on a specific and predetermined colour, thereby increasing the system protection against falsification.

CLAIMS

1.   Method   for   certifying   the   authenticity   of
predetermined products including a carrier for a set of
identification codes concerning distinctive data of said
products, said method comprising the step of obtaining a
check code by means of computation of at least a part of
said   identification   codes   according   to   predetermined
algorithms, characterized in that it further comprises the
following steps:

a)   enabling a predetermined and limited number of links
      between each check code and said identification codes;

b)   generating said check code consistently with said
      links within the enabled range of links as defined in
      step a),.

c)   printing said check code on said carrier according to
      the generated links.

2.   Method according to claim 1 characterized in that said
check code is invisibly printed on said carrier.

3.   Method according to claim 2 characterized in that said
check code is printed on said carrier by means of inks
which are visible through a Wood light source.

4.   Method according to one or more of the preceding claims
characterized in that said carrier is constituted by one
of the following items:

-    a label for an article of clothing;

-    a ticket, e.g. a railway, airplane, bus, boat,
     theater, entrance ticket;

- · an instrument of credit, e.g. a state bond;

-    a coupon;

-    a compact disk;

-    a credit card.

5.   Method according to anyone of the preceding claims,
characterized in that the generation of the predetermined

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comparison, said inspection module being protected against tampering.
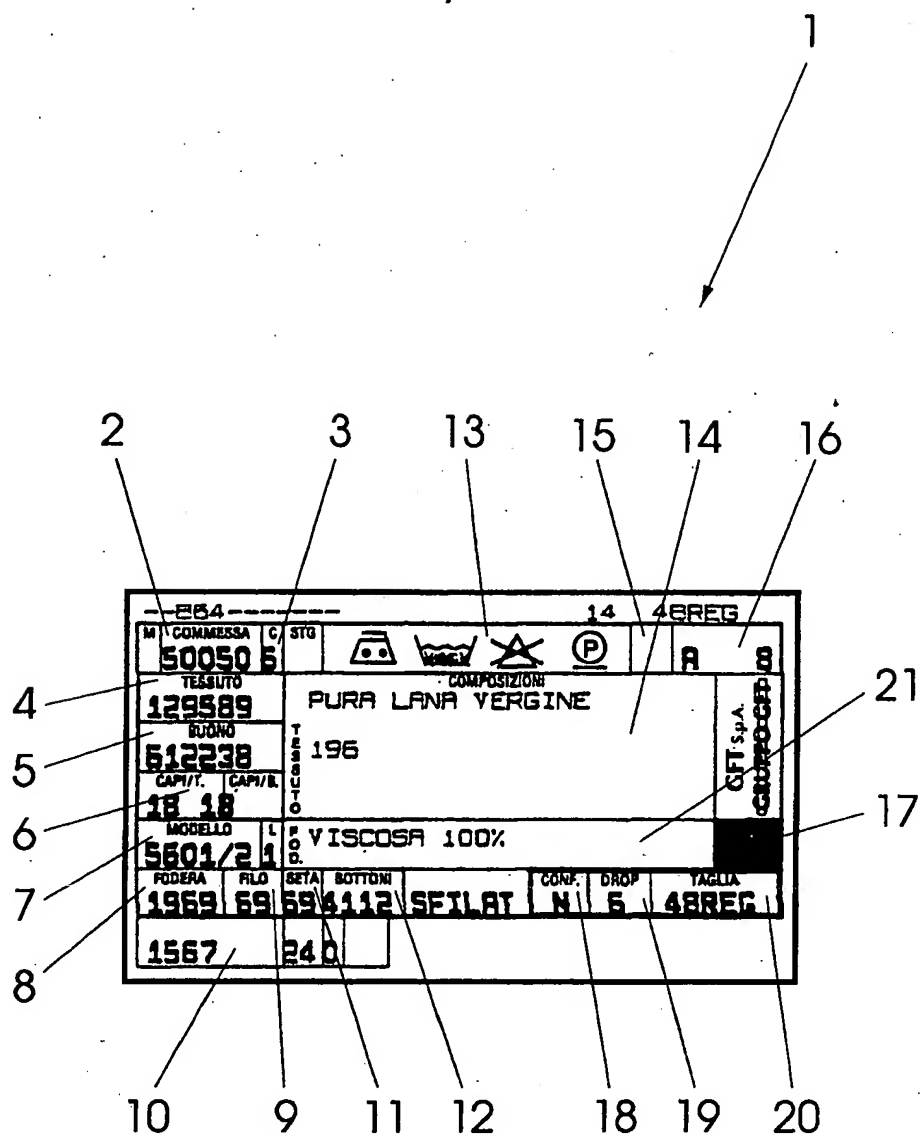
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6   G07F7/12

According to International Patent Classification(IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6   G07F   G07D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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[X] Further documents are listed in the continuation of box C.   [X] Patent family members are listed in annex.

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Date of the actual completion of theinternational search	Date of mailing of the international search report
6 March 1998	18/03/1998

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